

## Remarks

### *Summary*

Claims 1, 3, 5, and 8-10 have been amended, claim 2 has been cancelled, and new claims 11-18 have been added. Claims 1, and 3-18 are pending for consideration.

### *Drawings*

The Office Action objected to Figs. 10 and 11 for failing to include a legend indicating that the figures are "Prior Art". As shown in the attached replacements sheets for Figs 10 and 11, these figures now include the legend - - (Prior Art) - - . Marked-up copies of Figs 10 and 11 showing the changes in red are also attached.

### *Claim Objections*

Claim 1 was objected to for reciting "grove" instead of "groove". This informality has been corrected.

### *Claim Rejections - 35 U.S.C. § 112*

Claims 1, 2, 8, and 9 were rejected under 35 U.S.C. § 112, second paragraph, "as being indefinite for failing to point out and distinctly claim the subject matter which applicant regards as the invention" (See, Office Action at page 2, paragraph 3).

Specifically, the Office Action asserts that claims 1 and 2 are "vague and indefinite as to the relationship between the first portion, the second portion, and the reference width" (See, Office Action at page 2, paragraph 4). As amended, claim 1 no longer recites the "first portion", the "second portion", and the "reference width", and claim 2 has been cancelled.

The Office Action also states that claims 1 and 2 are “indefinite as to what is ‘the reference width.’” Claim 1 has been amended to recite a “maximum width” instead of a “reference width.” Claim 1 has been further amended to describe maximum width with reference to a thickness “H” of the wiring. Accordingly the indefiniteness rejection of claim 1 has been obviated.

Claim 8 was rejected for being using the term “ $\sqrt{3}$  half”. Claim 8 now properly recites  $\frac{\sqrt{3}}{2}$ .

Claim 9 was rejected for use of the phrase “reference width”. Claim 9 has been amended to recite “maximum width” instead of “reference width”. The meaning of “maximum width” is clear from its use in amended claim 1 and from the specification.

The above issues being properly resolved, claims 1, 8, and 9 satisfy the requirements of 35 U.S.C. § 112, second paragraph.

#### ***Claim Rejections - 35 U.S.C. § 102/103***

Claims 1-10 were rejected under 35 U.S.C. 102(b) as being anticipated by Jain (U.S. Patent No. 5,602,423). This rejection is respectfully traversed for at least the following reasons.

The wiring structure of amended claim 1 comprises a wiring having “a thickness H (nm) and a width W ( $\mu\text{m}$ ) that is larger than a width Wmax ( $\mu\text{m}$ ), wherein the maximum width Wmax is calculated from the following equation,  $\text{Wmax} = \text{Exp}(\text{H}/735)$ . Further, amended claim 1 specifies “a distance L between slit dummies, which is less than Wmax.”

Jain not only fails to disclose a particular width and thickness for the wiring, but Jain also fails to disclose a width and thickness related in any manner. Further, Jain fails to disclose a particular distance between slit dummies. Indeed, the Office Action frankly admits that, “Jain is silent about

having a reference width based on which the distance between the slit dummies are determined" (See, Office Action at p. 4, paragraphs 3).

Due to the fact that several specifically recited elements of amended claim 1 are absent from the disclosure in Jain, the anticipation rejection of claim 1 under 35 U.S.C. § 102(b) is clearly improper. Because pending claims 3-10 depend either directly or indirectly from claim 1, the rejection of these dependent claims under 35 U.S.C. § 102(b) is also improper.

Original claims 1-10 were also rejected under 35 U.S.C. 103(a) as being obvious in view of Jain. This rejection is respectfully traversed for the following reasons.

The Office Action airily asserts that while "Jain is silent about having a reference width based on which the distance between the slit dummies are determined . . . one skill in the art would choose a pillar pattern or pillar spacing because such a determination is required to provide an acceptable protector from polish damage" (See, Office Action at p. 4, paragraphs 3-4). According to Jain, the "conducting segment width (i.e. pillar to pillar spacing...) may be set to *any* level which a practitioner deems to provide acceptable protection from polish damage" (Emphasis added. See, Jain at col. 6, lines 64-67).

Regarding the foregoing obviousness conclusion, applicant notes at least two problems. First, Jain fails to provide any indication as to what constitutes "acceptable protection". Indeed, Jain is committed to the notion that "experimentation with specific conducting and insulating materials and a desired CMP process is **required** to determine the minimum line width of a conductor which requires such pillars" (Emphasis added. See, Jain at col. 5, lines 18-21). Such an admission clearly indicates that within the context of Jain, what constitutes "acceptable protection" is not only nonobvious, but the range of "acceptable protection" actually also varies in nonobvious ways in

relation to the specific procedures and materials used. Jain provides no indication of which parameters to vary in order to achieve “acceptable protection”. In particular, Jain fails to mention whether thickness, or resistance, or a relative amount of dishing, or any number of other factors ought to be considered in order to achieve “acceptable protection”. In sum, the present invention cannot be said to be obvious in view of Jain, because Jain utterly fails to suggest which of many parameters to vary in order to achieve “acceptable protection”, or which of many parameter choices is likely to successfully achieve “acceptable protection”.

Second, Jain fails to relate the thickness of the wiring to the “conductive segment width.” Astonishingly, Jain fails to even suggest or describe a particular thickness for the wiring - - much less describing thickness as a parameter in determining the conducting segment width. Since Jain fails to suggest thickness as a parameter used to choose a particular conducting segment width, it would *not* have been obvious to one skilled in the art to choose a particular conducting segment width based on the thickness of the wiring as recited in the pending claims. Instead, wiring thickness would appear to be almost irrelevant in view of Jain, but for the teaching of the subject application.

For *at least* the reasons stated above, applicant respectfully contends that amended claim 1 would not have been obvious to one of ordinary skill in art in view of the art of record . Accordingly, applicant requests allowance of amended independent claim 1. Claims 3-10 depend from claim 1 and should likewise be allowed for at least the reasons given above in relation to claim 1.

Like amended claim 1, newly added independent claim 11 recites “a conductive pattern having a thickness H (nm) and a width W ( $\mu$ m) that is larger than a maximum width Wmax ( $\mu$ m), wherein...  $W_{max} = \text{Exp} (H/735)$ ; and the slit dummies...being separated by a distance L that is less than the maximum

width Wmax.” Thus, claim 11 should be allowed for at least those reasons described above in relation to amended claim 1. Claims 12-18 depend from claim 11 and should likewise be allowed based on at least the distinctions made in relation to claim 11.

### Conclusion

No other issues remaining, reconsideration of amended claims 1 and 3-10 is requested. A favorable action on pending claims 1 and 3-18 is also requested .

Respectfully submitted,



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# Annotated Marked-up Drawings

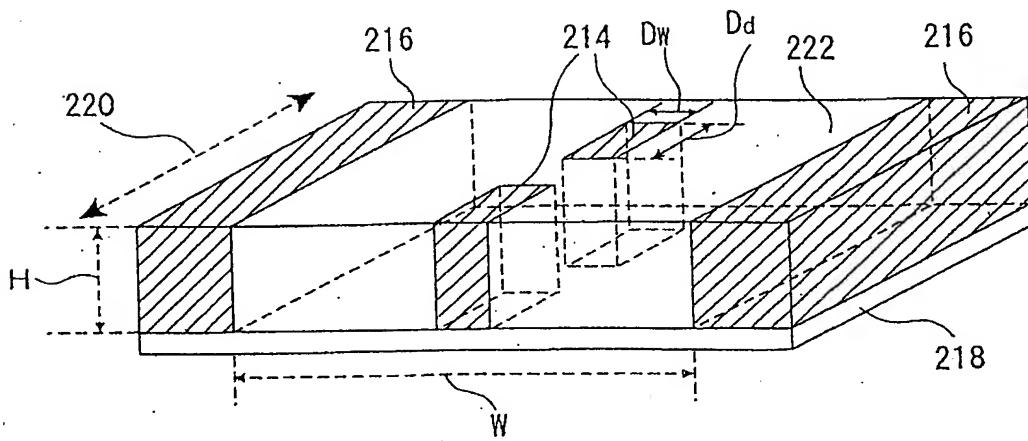
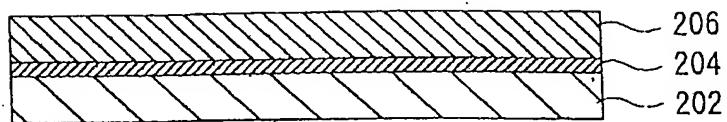


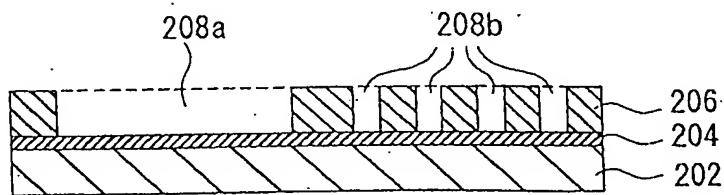
Fig. 11  
(Prior Art)

# Annotated Marked-up Drawings

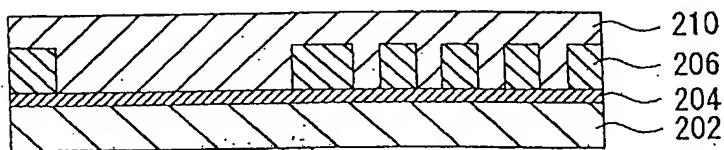
(A)



(B)



(C)



(D)

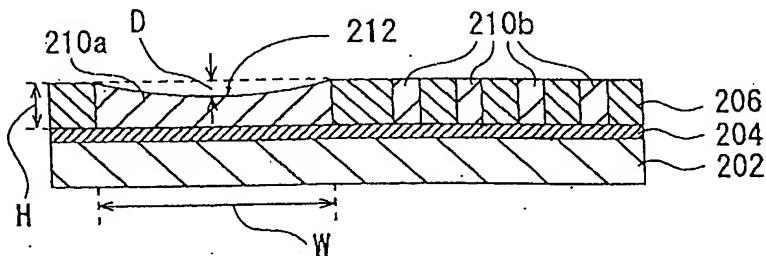


Fig. 10

(Prior Art)